



# SPECIMEN COLLECTION AND TRANSPORT TABLE

City of Milwaukee Health Department Public Health Laboratories  
841 N. Broadway, Milwaukee, WI 53202-3653

- Extremes in temperature (cold and hot) during transport of specimens should be avoided and may lead to inaccurate or misleading results. The laboratory has **Styrofoam containers** available for transport. If needed, please call 414-286-3526.
- Specimen submission forms are available from the laboratory. Please call when needed. Please note on specimen submission forms (i.e. test requisition) any delay in the transport of specimens. Knowledge of this information will direct appropriate test "setup" and more accurate interpretation of test results.
- If an outbreak is suspected, the laboratory can assist with appropriate test selection, collection and transport information. In addition to clinical specimens, **Environmental, Food, Dairy, Water** and **Air** testing are available for public health needs.

[BACTERIOLOGY](#) | [MYCOPLASMA](#) | [SYPHILIS SEROLOGY](#) | [MYCOLOGY](#)  
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Organism/ Infection	Specimen/ Site	Kit(s) Available at MHD - Laboratory (Specimen Handling)	Procedure	Statistics (2003)
<b>BACTERIOLOGY</b>				
Bacterial enteric pathogen infections: <i>Salmonella</i> , <i>Shigella</i> , <i>Yersinia</i> , <i>Campylobacter</i> <i>E. coli</i> O157:H7  Form Number: H-429A 989 R3/97	Stool specimen	Enteric Pathogen Kit. Includes: vial of Carey-Blair (red) transport medium, plastic stool container, lab requisition, and instruction sheet. <b>Transportation:</b> Transport specimen in a plastic zip-lock bag on wet ice, with the lab requisition in the outer pouch. <b>Storage:</b> Refrigerate the specimen and unused Carey-Blair transport medium. <b>Turnaround Time:</b> Negative: 2 days Presumptive positive: 2-3 days Confirmed: 3-7 days	Appropriate media are inoculated directly with the specimen and also after an enrichment step. Suspected organisms are identified using biochemical tests and serological typing.	From 90 stool specimens processed in 2003, 12.0% were positive for enteropathogenic bacteria. <i>Salmonella</i> was the most commonly isolated enteric pathogen.
<i>Bordetella pertussis</i> (whooping cough)  Form Number: H-429A 989 R3/97	Nasopharyngeal	Pertussis Kit. Includes: Plate and tube of Regan-Lowe medium, 2 ringed slides, lab requisition and instruction sheet. Keep refrigerated until use (DO NOT FREEZE). <b>Transportation:</b> Deliver as soon as possible. If delay is expected, incubate inoculated culture plate and transport medium tube at 35°C until delivery is possible. <b>Turnaround Time:</b> DFA same day. Culture: 3-7 days.	DFA: Smear is stained with fluorescent antibody and examined using fluorescent microscopy. Culture: Regan-Lowe plates are inoculated directly with specimen or from transport medium and incubated at 35°C and examined daily. Characteristic colonies confirmed by direct fluorescent antibody (DFA).	Twenty eight cases of <i>B. Pertussis</i> were detected by the Milwaukee Health Department Laboratories. Majority of the cases were detected during the months of August through December which was consistent with the previous year's observations (1987-2002).

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<b>BACTERIOLOGY (Cont'.)</b>				
Referred culture Identification  Form Number: H-429A 989 R3/97	Pure culture of isolate submitted in tube or plate	No kit is required. <b>Transportation:</b> Pure culture in a tube or plate. Transport at room temperature. Extended storage at 4°C. <b>Turnaround Time:</b> 7-21 days.	Various biochemical tests and cellular fatty acid analysis are used for identification.	624 isolates were identified in 2003.
Strep Throat  Form Number: H-429A 12/90	Throat	Culturette swab. <b>Transportation:</b> 25°-30°C. <b>Turnaround Time:</b> 24 hours.	Cultured on blood agar plate with 0.04 U bacitracin disc.	25.0% of specimens received were positive for Group A Beta- strep in 2003.
Tuberculosis  Form Number: H-432 R12/99	Sputum	Sputum collection kit. Includes: sterile 50 ml. Collection tube and a leak-proof container). <b>Transportation:</b> Transport on wet ice. <b>Storage:</b> Refrigerator temperature. <b>Turnaround Time:</b> 3-6 weeks.	Concentrated specimens are examined microscopically after staining and plated onto solid media. Portions are inoculated into Bactec vials. Identification by biochemical testing and DNA probe. Susceptibility testing performed upon request.	The most common isolates in 2003 were:  <i>M. avium</i> complex <i>Mycobacterium tuberculosis</i>
<i>Legionella</i> Evaluation (Culture/DFA)  Form Number: H-429 989 R3/97	Respiratory specimens: Sputum, BAL, Bronchial wash, Lung tissue, etc.	<b>Transportation:</b> Deliver immediately to lab on wet ice or refrigerate at 4-8°C for up to 24 hours. For extended storage, samples may be frozen -20°C. <b>Turnaround Time:</b> DFA: Same day. Culture: 3 to 14 days.	DFA – Monoclonal antibodies are used to identify all serogroups of <i>Legionella</i> <i>pneumophila</i> . Portions of untreated and acid treated specimen are plated with selective and non-selective BCYE media plates. Characteristic colonies are identified.	The number of positive cases increases during August through October (1983-2003).
<i>Legionellosis</i> (Diagnostic)  Form Number: H-429 989 R3/97	Urine (random)	<b>Transportation:</b> Transport specimen at 4-8°C. <b>Turnaround Time:</b> Same day for specimens received before noon. For those received after noon, results available the next day.	<i>Legionella pneumophila</i> Serogroup 1 antigen detected in urine by enzyme immunoassay (EIA).	Legionella urine antigen was detected in 3 of 295 patients tested in 2003.
<i>Legionellosis</i> (Diagnostic)  Form Number: H-429 989 R3/97	Serum: Acute and Convalescent collected 2-4 weeks apart	<b>Transportation:</b> Transport at 2-4°C or on wet ice. <b>Storage:</b> Serum may be refrigerated at 2-4°C for several days. For extended storage, freezing at -20°C is recommended. <b>Turnaround Time:</b> 7-14 days.	Quantitative total antibody to <i>L. pneumophila</i> serogroups 1-6 detected using indirect immunofluorescent assay (IFA). Positive serological confirmation based on a four-fold increase in titer between acute and convalescent area.	No serological positive case was detected in 2003.
<i>Legionella</i> Environmental Sample.  Form Number: H-429 989 R3/97	500 ml of water in sterile, leak-proof container.	Contact laboratory before collection.  <b>Turnaround Time:</b> 3 to 10 days.	Approximately 300 ml of water is filtered. Trapped microorganisms on the filter are recovered and inoculated on a culture media.	Aquatic environment samples are tested in an outbreak situation.
<b>MYCOPLASMA</b>				
<i>Mycoplasma</i> (Genital or Oral)  Form Number H-429A 989 R3/97	Genital swab, urine, biopsy specimen, sputum, BAL, throat or nasopharyngeal swab	<b>Transportation:</b> For optimal recovery, specimens should be refrigerated and delivered within 6 hr. after collection. If not possible, specimen should be placed in appropriate transport media and frozen at -20°C for up to 2 weeks or at 70°C for longer term storage. <b>Turnaround Time</b> (see next page)	Specimens are cultured using agar-broth technique. Identification is performed on the basis of biochemical reactions and hemagglutination test.	More than 1478 specimens were tested for oral and genital <i>Mycoplasma</i> in 2003. Resp. Genital (312 + 1166 = 1478 total)

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MYCOPLASMA (Cont'.)				
		<b>Turnaround Time:</b> Genital: 2-7 days, Oral 2-6 weeks.		
SYPHILIS SEROLOGY				
Syphilis Serology (VDRL)  Form Number: H-429 989 R3/97	Serum or CSF	Whole blood tubes without anticoagulant, serum or CSF free from visible contamination. <b>Transportation:</b> Transport at room temperature. <b>Turnaround Time:</b> 24 hours	A non-specific screening test that uses a cardiolipin-based antigen is used to detect Reagin (an anti-lipid substance) in reactive serum or CSF specimens.	9,530 specimens were screened in 2003 with a positivity rate of 4.6%.
FTA-ABS  Form Number: H-429 989 R3/97	Serum	<b>Transportation:</b> Serum specimens are transported as above. NOTE: This test is not performed on CSF. <b>Turnaround Time:</b> 1 to 4 days.	Qualitative IFA procedure specific for <i>Treponema pallidum</i> antibodies using <i>T. pallidum</i> antigen (Reiters strain).	Reactive VDRL tests are confirmed by FTA-ABS test. 312 specimens tested in 2003 with a positivity rate of 49.4%
MYCOLOGY				
Ringworm/ dermatophytes	Hair, Skin, Nails	Collect scrapings from the infected site in a small clean envelope. <b>Transportation:</b> Room temperature <b>Turnaround Time:</b> 1 to 4 weeks.	Direct exam by light microscopy of stained and unstained preparation. Culture on Sabouraud-Dextrose and Mycotel agar plates. Identification by microscopy and characteristic growth on trichophyton agar.	40 clinical and reference samples were processed for the identification of fungi in 2003.
PARASITOLOGY				
Parasitic Infections: <i>Cryptosporidium</i> , <i>Giardia</i> , <i>Cyclospora</i> , microsporidia, amoeba, roundworms, tapeworms, etc.	Stool specimens only	Ova & Parasite Kit contains: Formalin & PVA vials, with small plastic spoons attached to inside of lids, a stool collection container, 2 tongue depressors, lab requisition and instruction sheet. <b>Transportation:</b> Stool specimens should be kept refrigerated before and during transport. Specimens in formalin and PVA can be transported without refrigeration. <b>Turnaround Time:</b> Same Day – 2 days.	Specimens are concentrated using a formalin-ethyl acetate-extract procedure and examined by light microscopy using stained and unstained wet preparations.  Direct immunofluorescent microscopy is used for the simultaneous detection of <i>Cryptosporidium</i> oocysts and <i>Giardia</i> cysts.	Fifteen different types of parasites were identified. Dual or multiple infestations were common. The most frequently detected parasite was:  <i>Giardia lamblia</i>
Pinworm  Form Number H-429 989 R3/97	Peri-anal	Cellulose tape slide prep, applicator stick, swab, lab slip, instruction sheet (transparent scotch tape, cellophane). <b>Transportation:</b> Ambient <b>Turnaround Time:</b> Same Day – 2 days.	Microscopic examination of cellulose tape slide.	One case of pinworm ( <i>Enterobius vermicularis</i> ) was detected in 2003.
CHLAMYDIA				
<i>Chlamydia trachomatis</i> culture  Form Number: H-445 9/89 R10/98	Genital swabs: Endocervical or Urethral newborn: Nasopharyngeal or eye swabs	Need to use transport system specific for Chlamydia. Transport swabs or medium available upon request. Please call the lab. <b>Transportation:</b> Refrigerate specimen soon after collection. DO NOT FREEZE! <b>Turnaround Time:</b> 3 – 5 days.	Specimen inoculated into McCoy cells, incubated for 3 days, then stained with iodine for detection of <i>Chlamydia spp.</i>	Approximately 300 in 2003. Positivity rate 12-15% annually.
<i>Chlamydia trachomatis</i> , N.A. Amplification	<b>Male:</b> urethral or urine. <b>Female:</b> endocervical or urine	Need to use specific transport system for Becton Dickinson (BD Probe Tech). Transport swabs available upon request. Please call the laboratory. <b>Transportation:</b> Transport swab to the lab at room	Utilizes the BD Probe Tech nucleic acid technique to detect the presence of <i>Chlamydia trachomatis</i> .	Started use in 2003 with approximately 8000 specimens. Positivity rate of 18%.

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CHLAMYDIA (Cont'.)				
Form Number: H-445 9/89 R10/98		temperature. <b>Turnaround Time:</b> 24 hours.		
<i>Chlamydia pneumoniae</i> culture  Form Number: H-445-9/89 R10/98	Nasopharyngeal or throat swabs, B.A.L., bronchial washings	Washings; lavages; swabs without antibiotics that are designed for collection of <i>Chlamydia</i> . Transport media available upon request. Please call the lab. <b>Transportation:</b> Refrigerate specimen soon after collection. Keep refrigerated during transport. DO NOT FREEZE! <b>Turnaround Time:</b> 3-10 days.	Cultured in HEP-2 cells and incubated for 3 days. Cells then stained with fluorescent antibody to detect the presence of Chlamydia elementary bodies. All initial negatives are blind passaged. Set up weekly. Tuesday and Friday.	Organism reported to be responsible for 10% of all cases of pneumonia. Causes illness in all age groups, but most severe disease in young children and the elderly. Prevalence increases with age.
VIROLOGY				
Viral culture: " <u>Most common</u> " human viruses will grow in the cells for culture.  Form Number: H-445 9/89 R10/98	Collect specimen from appropriate site, i.e.: throat for respiratory, rectal or stool swab for diarrhea, CSF for CNS disease.  Lesion swabs for <i>Herpes simplex</i> or <i>Varicella-zoster</i> virus	Test tube of liquid MEM or viral culturette. Transport media available upon request. Please call the laboratory. <b>Storage:</b> Immediately refrigerate or place on wet ice. May be held for up to 72 hours after collection. DO NOT FREEZE! <b>Transportation:</b> Keep refrigerated or on wet ice during transport. <b>Turnaround Time:</b> Typically, 1-10 days. Up to 21 days for slow growers.  If necessary, phone for preliminary results.	Specimens are inoculated onto at least six cell types: primary monkey kidney, HEP-2, human foreskin diploid (HFS), human embryonic lung diploid, Madden-Darby canine kidney (also RD or BGIMK cells for other seasonal viruses). Cell lines read daily for characteristic cytopathic effect (CPE) and all positives reported the day cell cultures become positive. Negatives reported after 9-11 days. For CMV, shell vials of human foreskin cells are incubated for 48 hours and then stained with fluorescent antibody for the presence of CMV-specific immediate-early antigen. In addition, HFS cell cultures are inoculated and held for 21 days, due to the slow growing nature of the virus.	Approximately 2000 specimens are processed per year. Annual isolation rate is 15-20%. Most virus cultures become positive at 3 to 7 days – slightly faster for <i>Herpes simplex</i> viruses.
<i>Herpes Simplex</i> virus  Form Number: H-445 9/89 R10/98	Oral/Genital swabs	Test tube of liquid MEM or viral culturette. Transport media available upon request. Please call the laboratory. <b>Storage:</b> Immediately refrigerate or place on wet ice. May be held for up to 72 hours after collection. DO NOT FREEZE! <b>Transportation:</b> Keep refrigerated or on wet ice during transport. <b>Turnaround Time:</b> Typically, 1-10 days. Up to 21 days for slow growers. If necessary, phone for preliminary results.	Specimen inoculated onto 6 different cell types, as above. Cell lines read daily for characteristic CPE. Of those cultured that are positive for HSV-2, 30% are positive at 24 hours; 60% at 48 hours and 90% are positive at 72 hours.	Annually, approximately 35% of genital specimens submitted for virus culture are positive for HSV. For genital isolates, 85% are HSV-2 and 15% are HSV-1.
Rotavirus Antigen Detection  Form Number: H-445 9/89 R10/98	Stool	Collect fresh, raw stool in clean stool cup or culturette. <b>Storage:</b> Refrigerate. DO NOT FREEZE! <b>Transportation:</b> Keep refrigerated. <b>Turnaround Time:</b> 1-2 days.	Enzyme Immunoassay (EIA-run daily).	Annual winter epidemics from late December through March. Most infected are less than 3 years of age.
Virus Serology  Form Number: H-445 9/89 R10/98	Serum: Acute and Convalescent collected 10-14 days apart. Acute and convalescent	Collect (1) 8 to 10 ml of whole blood without anticoagulant (red-top tube). Allow to clot. Keep refrigerated or (2) 4 to 5 ml of serum in serum separator tube.	The complement fixation (CF) test measures quantitative total antibody and is run once per week. Individual viral antigens are available, as well as antigen "panels" for respiratory, CNS and	Good test for respiratory viral infections, <i>Mycoplasma pneumoniae</i> and psittacosis. Also useful in the diagnosis of <i>Herpes encephalitis</i> , as well as

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VIROLOGY (Cont'.)				
	serums should be submitted together.	<b>Storage:</b> Keep whole blood refrigerated. DO NOT FREEZE! Serum may be refrigerated for several days at 2-4°C. For extended storage, freezing at -20°C is recommended. <b>Turnaround Time:</b> 1-7 days.	exanthem (rash) viruses. A four-fold increase in antibody titer is considered diagnostically significant. See Test Listings for complete listing in Fee Schedule.	for enteroviruses during the summer months.
Immune status testing for Measles, Mumps, Rubella and Varicella  Form Number: H-445 9/89 R10/98	Serum or whole blood in separator tube.	As above. <b>Turnaround Time:</b> 1-4 days.	Enzyme Immunoassay (EIA) for Measles, Mumps and Rubella IgG antibody. Indirect Fluorescent antibody. Indirect Fluorescent antibody (IFA) for Varicella IgG antibody.	The presence of IgG antibody is generally considered evidence of protective immunity under most circumstances.
Special Serology: <i>M. pneumoniae</i> IgM Parvovirus B19, Measles IgM  Form Number: H-445 9/89 R10/98	Serum or whole blood in separator tube.	As Above. <b>Turnaround Time:</b> 1-4 days.	Enzyme Immunoassay (EIA) for <i>M. pneumoniae</i> IgM Indirect Fluorescent antibody (IFA) for Parvovirus B19 IgG/IgM and Measles IgM. See Test Listings for complete listing in Fee Schedule.	The presence of IgM antibody is generally considered evidence of a recent infection with the virus or organism.
BLOOD LEAD				
Lead, Blood  Form Number: H-434-790	Whole Blood, venous or finger puncture	Collect whole blood in Vacutainer tube containing EDTA or heparin. Capillary tubes are not accessible. Pediatric minimum specimen is 250 micro liters. <b>Storage:</b> Refrigerate after collection. <b>Transportation:</b> Keep refrigerated. <b>Turnaround Time:</b> 24-48 hours.	Graphite Furnace Atomic Absorption Spectrometry	Primarily used for pediatric lead poisoning detection. Acceptable Range: Children: 0-9 ug/100mL Adults: 0-40 ug/100mL  Please see the Milwaukee Health Department recommendations for the interpretation of lead levels.
			For information on incidence of lead poisoning in the City of Milwaukee call 414-225-LEAD or visit them at: <a href="http://www.milwaukee.gov/health/lead/index.htm">www.milwaukee.gov/health/lead/index.htm</a>	

NOTE: For optimal recovery of micro-organisms, specimens should be processed within 2 hr. of collection.

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